

## MFJ 9330 Cub Arrives

Just before July 4<sup>th</sup>, 2009, my MFJ 9330 Cub arrived at WA3WSJ's Shack. I've been looking for a 30M kit for weeks without much success, but as luck has it, Ray, K2ULR, has a used built one. We work out a price for the rig and now it's sitting on my bench.



I now proceed to check it out. The outside as seen on the left, looks nice. The enclosure has no marks on it and the rig has all the knobs in tact. The outside looks like it's new! I also really like the feel of the on-off switch. All the jacks seem to work and my 9330 Cub seems like the rig I need for my Walkabout Project. It's small and the specs reveal a hot receiver, but a somewhat limp power output. Speaking about specs, here are the specs that MFJ states about the Cub:

### MFJ Cub Specifications:

- Hot receiver: 0.2 uV sensitivity pulls in weak signals
- Low noise: Virtually no noise contribution from receiver electronics
- Sharp passband: Crystal filter and shaped audio reject QRM and QRN
- Differential-Mode AGC: Audio output holds rock-steady over 80 dB signal range
- Robust AF Output: Drives stereo phones or external speaker
- Adjustable Transmitter: RF output is variable to zero. 2 Watts out thru 20M, 1W on 17/15 M
- Full QSK: Seamless electronic switching for smooth break-in
- Natural Sidetone: Pure sine-wave receiver monitors signal
- Shaped Keying: Controlled envelope for click-free keying
- Custom TX offset/Receiver passband center: User-adjustable
- Low Power Drain: Use any regulated 12 to 15 VDC source. 36 mA receive, 380 mA transmit
- Buy them all or choose from 80, 40, 30, 20, 17, or 15 Meters
- Cub VFO Range
  - MFJ-9380: 6.440 - 6.500 MHz (60 kHz range)
  - MFJ-9340: 4.940 - 5.000 MHz (60 kHz range)
  - MFJ-9330: 4.100 - 4.120 MHz (20 kHz range)**
  - MFJ-9320: 4.000 - 4.060 MHz (60 kHz range)
  - MFJ-9317: 8.068 - 8.118 MHz (50 kHz range)
  - MFJ-9315: 9.000 - 9.050 MHz (50 kHz range)
- Truly Portable: Set up anywhere, tuck out of way when not in use

Ok the outside of the Cub looks nice, but now it's time to open up the hood and see how it really looks inside. The inside looks great too. No major problems with Ray 's build, but how does it work? The first item I notice is that MFJ uses a RCA Jack for the RF output connector? I really don't like this so I remove it from the PCB. As seem to the right, a BNC connector is installed on the back panel and I plan to wire it in for use.

I now proceed to check out the receiver. It looks like the VFO range is set for 10.099mhz to 10.121mhz. I adjust L3 and now it's 10.100mhz to 10.122mhz. The sensitivity is around .25uv so I retune L1 and L2 and now it's a real hot receiver with a sensitivity of around .1uv!

Now on to the transmitter to see how it looks. Here I have a problem as the rig only has 50mw of RF output power? The power supply is set at 12.5vdc and the Cub only draws 175ma with 50mw of power output. After retuning L6 and L7, I now have 1.25w with a current draw of 235ma. Better, but still not enough RF power output. Here I decide to do my first modification to the Cub. My plan is to replace the final RF output transistor 2N5109 with a MRF-237 Transistor. This modification should result in an increase of power output. I have ordered the transistor, but it hasn't arrived here yet.

Well I received the MRF-237 Transistor and installed it, but only had around ,25mw RF output with it. I tried another one with the same results. So I installed the original 2N5109 Transistor and again have 1.25 watts of output. I plan to buy a 5W amplifier kit and install it to get more output power from the rig.

